ABSTRACT

The purpose of this study was to investigate the association between phagocytosis and increased RNA synthesis using rat bone marrow cells and peritoneal neutrophils.

RNA synthesis was measured by the incorporation of H^3-uridine into total acid precipitable material, since it was found that bone-marrow cells were better able to incorporate this precursor rather than H^3-uracil. In later experiments, the actual "synthesis" of RNA was confirmed both by the use of an inhibitor of this process and by estimation of changes with time in the specific activity of the acid soluble nucleotide pool and high molecule weight RNA.

Experiments in which the effects of rabbit RBC - rat anti rabbit RBC antiserum complexes, bovine fibrin and rat fibrin, all of which are phagocytosed by neutrophils were examined, showed that there was no appreciable increase in RNA synthesis on phagocytosis of these particles by bone marrow cells or peritoneal neutrophils.

As a result, other factors involved during the early stages of the inflammatory response were examined for their effect on RNA synthesis in bone-marrow cells.

The plasma enzyme, plasmin, at several concentrations had no effect on RNA synthesis in bone-marrow cells. "Aged" bovine fibrin gave a significant increase in RNA synthesis which was concentration dependent.

An investigation of the effect of post-heparin lipoprotein lipase on RNA synthesis in bone-marrow cells showed that this partially purified enzyme stimulated significantly RNA synthesis in bone-marrow cells and peritoneal neutrophils. This increase in RNA synthesis was further stimulated by both fibrinogen and fibrin.

Some interpretation of results is presented, which suggests that post-heparin lipoprotein lipase by affecting the membranes of neutrophils, stimulates RNA synthesis in these cells.